

Intro:

Hi I am Mary Leisenring. The Decennial Census is critical for communities and is also used for the purpose of apportionment and redistricting. Welcome to the Comprehensive Course for Accessing 2020 Census Redistricting Data. This course is divided in two parts that offer in-depth information on a variety of topics and resources. Part one is for everyone and kicks off by covering some background information on 2020 Census and the Redistricting Data Program, helping you understand the connection between the Decennial Census and Redistricting.

By the end of part one, you should know what redistricting data are available, the purpose for that data, and the methods you have available to you for how to access it.

Because redistricting data can be accessed from multiple places, and come in different formats,

I will explain these to you and help you understand which search method may be best for your needs.

Hi, I am Alexandra Barker, I will be co-facilitating this course with Mary. Part 2 focuses on demonstrating how to access redistricting data. You will have 4 learning pathways to choose from. Your first learning pathway will teach you how access data using the File Transfer Protocol Site, or FTP for short. I'll show you step by step how to locate, import, extract and download the data. In your second learning pathway, You, will learn how to use data visualizations, to identify trends and changes in your area. In the third learning pathway, you will learn how to use data.census.gov, to access data tables, create thematic maps, and download the data. In your last and fourth pathway, you'll learn how to make calls to the

Census Bureau API. Application Program Interface. Here is a visual of the learning paths.

Lessons 1-3 are universal and support your learning for all the learning paths in part 2. Of course, you can select more than one method to access redistricting data, so, pick as many learning paths as you like. In Lesson 3, you will learn more about the 4 paths in lesson 2 in order to determine which paths meet your data needs and skill level.

Lesson 1:

Redistricting is the redrawing of electoral district boundaries every ten years to account for population shifts and growth during the previous decade

The Decennial Census and redistricting go hand and hand. Article I, Sections 2 and 9, of the Constitution, directs that a census or enumeration be taken. So, every 10 years, starting with the first Census in 1790, the U.S. Census Bureau conducts a census once,

only once, and in the right place, to determine the number of people living in the United States for the purpose of apportionment. The data collected by the decennial census are used to determine the number of seats each state has in the U.S. House of Representatives. The population in 1790 was 3,929,625, and Congress used these results to apportion 105 seats among 15 states. According to the results of the 2020 Census, there were 331,449,281 people living in the United States as of April 1st, 2020 and 435 seats to apportion among 50 states. With each Decennial Census the number of congressional seats each state gets in the House of Representatives can change depending on the population.

State legislative bodies also use Decennial Census data for the purpose of redistricting. Required by law, under the provisions of Title 13, Section 141(c) of the United States Code (U.S.C.), the Secretary of Commerce (Secretary) is required to provide the “officers or public bodies having initial responsibility for the legislative apportionment or districting of each state ...” with the opportunity to specify geographic areas (e.g., blocks, voting districts) for which they wish to receive decennial census population counts by April 1 of the year following the decennial census. The Secretary is required to furnish the state officials or their designees with population counts for American Indian areas, counties, cities, census blocks, and state-specified congressional, legislative, and voting districts.

The 2020 Census Redistricting Data Program has 5 phases.

Phase 1 – is the Block Boundary Suggestion Project (BBSP)

The BBSP provides states the opportunity to submit their suggestions for the 2020 Census tabulation block inventory. (A Block is the smallest geographic area for which census data are available.

Blocks often use natural boundaries such as streets and rivers. Suggestions were made by designating the desirability of linear features for use as 2020 Census tabulation block boundaries. In addition, states had the opportunity to submit suggested legal boundary updates as well as updates to other geographic areas. These actions allowed states to construct some of the small area geography they need for legislative redistricting. Participation in Phase 1 of the Redistricting Data Program was conducted through the non-partisan liaison designated by each state. Phase 1 was conducted in two cycles, an initial identification of the updates needed, and a verification cycle to ensure the suggested updates were accurately applied.

Phase 2 is the Voting District Project, which provided states the opportunity to submit their voting districts (ex. wards, precincts, etc.) for inclusion in the 2020 Census Redistricting Data tabulations. This ensures states can get the 2020 Census data they need for their voting districts. As was the case in phase 1, during phase 2 states had the opportunity to submit suggested legal boundary updates as well as updates to other geographic areas. These actions allowed states to construct some of the small area geography they need for legislative redistricting. Participation in Phase 2 of the

Redistricting Data Program was conducted through the non-partisan liaison designated by each state. Phase 2 was conducted in three cycles. The first two cycles were an initial identification of the voting districts and a verification stage to ensure the suggested updates were accurately applied. The third cycle was an additional round of verification, for those states participating in one or both of the first two cycles, to further review and adjust the voting districts.

The Geographic Support Products were delivered to the states and published on the Census Bureau's website in January and February of this year.

This course pertains to Phase 3, delivery of the 2020 Census P.L. 94-171 Redistricting Data Files and Geographic Products. For Phase 3 data delivery, regardless of a state's participation in Phase 1 or 2, the Director of the Census Bureau will, furnish the Governor and state majority and minority legislative leaders, redistricting commissions (when applicable), and the non-partisan state liaisons with 2020 Census population counts for the geographic areas need to perform legislative redistricting (e.g., state, Congressional district, state legislative district, voting district, American Indian area, county, city, town, census tract, census block group, and census block). In addition, for those states participating in Phase 2, standard census tabulation will be provided for voting districts.

In 2019, the Census Bureau produced a prototype data product from the 2018 End-to-End Census Test to illustrate and solicit feedback on what the 2020 Census P.L. 94-171 Redistricting Data File will look like and how it addresses the needs of the states for their legislative redistricting requirements. This prototype is what we will be demonstrating with today and will allow you to practice and get your databases set up in advance.

Phase 4 is to collect the 118th Congressional Districts and the new state legislative districts from the states and Phase 5 evaluates and makes recommendations for the for the 2030 Census Redistricting Data Program

Here is what you have learned so far. First, the Redistricting Data Program collects information from the states to define and update geographic boundaries for redistricting purposes. Participating states have the opportunity to review the changes made. The Census is then conducted. The Census Bureau delivers the apportionment counts to the president, which are used to apportion the 435 congressional district seats in the House of Representatives. Next, the Census Bureau provides the PL 94-171 redistricting data tabulations to the states. After-which the Census Bureau collects the state redistricting plans and begins to evaluate and plan for the future. You can also anticipate other avenues to view and access redistricting data and more detailed demographic and housing statistics will be available after the redistricting data is released.

Lesson: 2

LESSON 2: Understanding the data

Today you are going to learn what data are available in terms of geography and the subjects covered in the data. You will also learn what other circumstances the data could possibly be used for outside of the purposes of redistricting.

Public Law 94-171 (P.L. 94-171) directs the Census Bureau to provide states the opportunity to identify small geographic areas for which specific data tabulations are needed and deliver high quality tabulations for those geographic areas to the states in a timely manner for the purpose of legislative redistricting.

The data in the 2020 Census P.L. 94-171 redistricting data files are derived from the response data collected from the 2020 Census. This decennial, the Census Bureau added data for the group quarters population by major group quarters type.

Let's take a look at the P.L. 94-171 redistricting data file topics you can access.

The redistricting products contain summary statistics on population and housing subjects. For the tables that start with P, the P stands for population. For the table that starts with H, the H stands for housing.

The official titles of the six tables that will be available to you, are as follows:

The P1 table presents the population break down by race. Redistricting data is offered for White, Black, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Some Other Race. It is also available for those who select any combination of these six races.

The P2 table presents data for Hispanic or Latino, and Not Hispanic or Latino by Race.

The P3 table presents Race for the Population 18 Years and Over

The P4 table presents Hispanic or Latino, and Not Hispanic or Latino by Race for the Population 18 Years and Over

The P5. table presents Group Quarters Population by major Group Quarters Type. Group Quarters type is broken down into institutionalized and non-institutionalized group quarters. This table includes the total population counts for institutional group quarters such as correctional facilities for adults, juvenile facilities, nursing facilities, and other institutional facilities as well as noninstitutionalized group quarters such as college/university housing, military quarters, and other noninstitutional facilities.

The H1 table presents Occupancy Status. This table includes total housing unit counts, as well as a counts of occupied and vacant housing units.

When talking about redistricting, it is important that these 3 administrative geographies are understood. Geography is always a central topic when talking about Census Bureau data because you must define the container for your data. These geographies are

related to redistricting because they form the container of voters for the respective government representatives.

Congressional Districts are the 435 areas from which members are elected to the U.S. House of Representatives. The number of representatives per state is updated after each Decennial Census.

State Legislative Districts (SLDs) are the areas from which members are elected to the upper and lower chambers of the state legislatures. These are updated after each Decennial Census. The Census Bureau first reported data for SLDs as part of the 2000 Public Law 94-171 Redistricting Data File.

Voting Districts (VTD's) refer to the generic name for geographic entities, such as precincts, wards, or election districts, established by state governments for the purpose of conducting elections.

Redistricting data are available for these common geographies you see on this hierarchy chart. The geographies in the center line of this graphic work like nesting dolls. The smallest level of geography is the Block.

Blocks are aggregated to form a block group, block groups form a tract, and so on.

You may have noticed there are numbers to the geographies. Every geography is given a summary level code. For example, a tract is given the summary level code 140 in later lessons you will learn how to use

As stated earlier, the Census Bureau will, furnish the Government and state majority and minority legislative leaders, redistricting commissions (when applicable), and the non-partisan state liaisons with 2020 Census population counts for the geographic areas needed to perform legislative redistricting.

So, for example state, Congressional districts, state legislative districts, American Indian areas, counties, cities, towns, census tracts, census block groups, and census blocks. You don't see city and town in this graphic, but in Census Bureau terminology, that is equivalent to Places, or County Subdivision in the northeast.

Let's talk a little more about boundaries. You know that this center line of geographies nest within each other. Tracts and blocks wouldn't cross county lines, because they nest inside each other. So, when looking at tract level data within a county the tract data would be whole or complete. But what about some of the geographies that don't fall within the center line?

A voting district is a geography used for the purposes of elections and therefore would not cross a county line.

You see how voting districts are of the county, so they nest within the county. While Congressional and State Legislative Districts can cross certain geographies, such as a county, they wouldn't cross a State Line. Data files for smaller geographies under these state legislative districts or places could contain tract portion or remainder data.

Another way to think of this is if you overlay a voting district map on top of map of tracts, you can see sometimes tracts might cover multiple voting districts boundaries.

Data users who need to go into a more in-depth analysis of geographic entities or relationships can find support through our suite of geographic support products. Here is a comprehensive list of Geographic Support Products. The 2020 Census P.L. 94-171 Redistricting Data are tabulated based on the geographic areas provided in these products. These products include TIGER/Line Shapefiles, Reference Maps, Block Assignment Files, Name Look-up Tables, and 2010 to 2020 Tabulation Block Crosswalk Tables.

Some data users will prefer to look at the maps, others will prefer to work with the text files (Block Assignment Files and Name Look-up Tables) to understand which blocks nest within which other geographies. Click on the links to learn more about the products and download them.

When you select a topic such as race from the P1 Race data table and a geography such as a State legislative district, you will discover the population count for each of the race iterations in the State Legislative districts. Analyzing these data is how redistricting officials make decisions about how to delineate their districts.

Now know that the purpose of the Redistricting Data Program is to comply with the law which 1. provides the data state officials need to redraw the boundaries of the congressional and state legislative districts and 2. provide the data needed so states can comply with redistricting rules or laws.

The general guiding principal of redistricting is designed so that each person has an equal say of 1 person 1 vote. This course does not cover redistricting laws and standards, but in general, legislative districts are drawn so that districts are within an acceptable range of the of the ideal district population. The ideal district population number is calculated by dividing the state population by the number of districts.

The Voting Rights Act of 1965 is also tied to redistricting data because section 2 states that a voting practice is unlawful if it results in discrimination based on race, color, or membership in a language minority group.

Redistricting can vary from state to state, for example some states have different deadlines, some states use commissions and others do not.

Because the PL files will be the first 2020 Census product released that will include demographic and housing characteristics data for detailed geographic areas, some may be interested in accessing these data for a variety of purposes.

Many may be generally interested in comparing available data between Decennial Censuses or comparing the 2020 Decennial Census and new data that is collected over the next 10 years. Analysts may be interested in combining the tabular data from the PL tables, with the spatial geography data, and voting data from their precincts. The 2020 Census population data establishes the benchmark for future population estimates and projections, which is calculated annually.

While more data and tabulations from the 2020 Census will be released in the coming months, the data provided in this initial data release may also be of interest to those who need data on the topics these covered, such as a voting researcher, and or a grant writer.

Here is what you have learned in lesson two. You learned about P.L. 94-171 files, the purpose for the redistricting files and the subjects you will find in each of the PL 94-171 data files. Then we introduced beginner census geography concepts so you could understand how geography is the container for the data you are looking at and is essential to how you access and view data. We then discussed other uses for the redistricting data and that they could include comparing data sets or be interesting to various researchers for example. Lastly, we discussed the differences between the PL data and additional 2020 data products.

Lesson 3:

Welcome to Pathway 3.

In lesson 10, you will learn from Census Bureau expert Maria Valdisera about how to access

2020 Census redistricting data using data.census.gov. Maria will also show you how to customize your tables, create thematic maps and download data for all available geographies. [Data.census.gov](https://data.census.gov) offers the most comprehensive method to access and use 2020 Census data. Data are offered in a tabular format but can also be viewed using a map. It allows you to select a variety of geographies for all 2020 Census topics as individual tables.

So, this resource may be helpful if you are looking for a particular topic for specific geographies from the available redistricting data tables.

Hi I'm Maria Valdisera. And I work for the Dissemination Outreach Branch.

The users may want to access the new redistricting data to view the population and housing counts for their community. To do this, navigate to our site at data.census.gov and click on the Advanced Search button located directly under the Single Search bar. Once you click on that link, you will see a list of filters on the left side of the screen. To access the Redistricting Data, click on the 'Surveys' filter and select the 'Decennial Census' option. Then, scroll down the list until you see 'Redistricting Data' with 'PL 94-171' in parentheses.

Click on the checkbox directly to the left of this survey title. Since we only want the newer tables from 2020, go to the 'Years' filter and select '2020' from the list. Then, select the geography you want to view. For this example, I will use the city of Atlanta, Georgia, so I'll click on the 'Geography' filter, and then scroll until I see the 'Place' geography.

So, after we select 'Place', we will choose the state that our place is in. Since Atlanta is in Georgia, you will click on 'Georgia' and the page will advance to show all places in Georgia. Since this is quite an extensive list, I recommend using the search bar that is available at the top of the panel.

If you click on the magnifying glass icon in the top right corner of the panel labeled 'Georgia', a search bar will appear, and you will be able to search for places within Georgia.

If I start typing 'Atlanta' into this search bar, the panel will automatically update to show places in Georgia that match my search term. Then, I'll click on the checkbox directly to the left of 'Atlanta city, Georgia', which should appear at the top of the list.

Once those filters are applied, click on the 'Search' button, located at the bottom right corner of the screen directly to the right of the 'Clear Filters' button.

Tables P1, P2, P3, P4 and P5 contain population data, and Table H1 contains housing data.

In this example, I will click on Table P1, 'Race', to view population data for Atlanta broken down by race for the total population, and then return to the results page and click on Table H1, 'Occupancy Status', to view the occupied and vacant housing counts for

Atlanta. But what if we want to view and download data for smaller geographic areas, such as Census blocks?

If we want to find Redistricting Data for all Census blocks within a county or state, we can start another search by clicking on the US Census Bureau logo in the upper left corner of the screen and hitting the Advanced Search button. Since Census blocks are only available for the Decennial Census, we will only need to select our geography in this search.

For this example, I selected Census blocks from Rockingham County, New Hampshire. Like our other searches, you'll click on 'Geography', and then 'Block'. Scroll down the next list of states and select 'New Hampshire', and then click on 'Rockingham County, New Hampshire' from the county list.

Next, you'll need to select the Census tract. For this example, I chose 'Census Tract 1001' from Rockingham County. The last step is to select the blocks you wish to view. I just selected a few blocks towards the top of the list. Then, click on the 'Search' button. Select any table to view, for this example I again chose table P1, 'Race'.

To download the table to your computer, click on the 'Download' button on the top left side of the screen above the table list. This action will prompt empty checkboxes to appear beside each table name in the list on the left side of the screen. You can select multiple tables to download at once, but for now, let's just select table P1. Once that table is selected, scroll up to the 'Download Selected' button at the top of the list and click on it.

A pop-up menu will appear confirming that you're downloading the 2020 Redistricting Data as a CSV file.

Once you click the 'Download' button in the lower right corner of the screen, you'll receive a message stating that the site is preparing the files. Once that is done, hit the Download Now button. This will download the .zip file to your Download folder on your computer.

Once you click on the download folder, you may be prompted to unzip the contents of the

.zip file to one of the file folders present on your computer.

I want to unzip the files to my 'Downloads' folder, so I'm going to click on 'Yes, unzip the files to Downloads'. Next, I'm going to navigate to the download folder and open the file that has "data with overlays" in the naming convention and select the file to open in Excel.

Now that I've clicked on that file and have finished waiting for it to open in Excel, I can see the data available for the Census blocks I've selected in the Excel file.

You can also find and map PL 94-171 data through data.census.gov.

Let's say you want to find group quarters data by congressional district in your state.

Again, we would click on the US Census Bureau logo and go to the Advanced Search.

Select the Survey 'Redistricting Data (PL 94-171)' from the 'Decennial Census' category.

Next, let's select congressional districts in Illinois for this example.

Through the 'Geography' filter, you will select 'Congressional Districts' and then 'Illinois' as the state. Then, select 'All Congressional Districts for the 116th Congress in Illinois' and click the 'Search' button as we did in our previous example searches.

For this example, I chose table P5, 'Group Quarters by Major Group Quarters Type'.

This is an additional table that was added to the 2020 Redistricting Data. Once you choose table P5, click on the 'Maps' button that is on the top left side of the screen above the table list.

This will show a map that will zoom in on the state of Illinois and display the 116th congressional district boundaries for the state of Illinois. The map will automatically default to show the 2020 PL Total Group Quarters Population of each Congressional District.

To change the data variable that the map is showing, click on the arrow directly to the right of the 'Total' button, which is located on the top left side of the page above the map view.

From there, you can scroll down the list and select any of the other variables that are present in the table to view within the map. You can also use the search feature directly above the list to find a particular data variable. For example, if I want to find a data variable that contains the word 'student', I can type 'student' in the search bar and then select the variable 'Total: - Noninstitutionalized population: - College/University student housing'.

Notice that the map updates with data for the new variable I selected, and the map now shows that Congressional districts in darker shades of blue have a higher number of students who are living in college or university housing.

With the release of the 2020 Redistricting Data, you'll also be able to compare data from the 2010 Redistricting Data as well. To do this return to the main landing page and then click on the 'Advanced Search' button again. From there, select the 'Redistricting Data' option again through the 'Survey' filter panel. Next, select the geography you wish to view.

For this example, let's choose all counties within the state of Alabama. To do this, go to the 'Geography' filter and select 'County'. Then, select the state of 'Alabama'.

In the next filter panel, select 'All counties within Alabama, which is located at the top of the list, and then click on the 'Search' button on the bottom right corner of the screen. There are five tables that will appear in the results page that are available for both 2010 and 2020. For this example search, I chose table P3, 'Race for the Population 18 Years and Over'.

Once we click on the table, it will automatically default to the most recent 2020 data. To toggle between the 2010 and 2020 data, navigate to the 'Product' dropdown menu located at the top of the screen above the table.

When you click on the downward facing chevron, you have the option of viewing either the 2010 or 2020 Redistricting Data.

When you click on the 2010 option, the table will automatically update to show data from 2010. You can toggle between 2010 and 2020 to compare the data directly and can see the changes in the geographies you've selected.

In this final example, let me show you a few features that will allow you to customize PL 94-171 data tables in the table view. We will return to the Advanced Search page once again, and select our 'Surveys' and 'Years' filters. Then, click on the Search button and select a table to view.

For this example, I chose table P4, 'Hispanic or Latino, and Not Hispanic or Latino by Race for the Population 18 Years and Over'. Next, click on the 'Customize Table' button located at the top right corner of the screen above the table. This new view, which is called the 'Customize

Table view,' is where you can access a lot of different functionality by clicking on the buttons in the ribbon located above the table. For example, the 'Customize Table' view provides another way to add additional filters to the table. You can select any of the Filters that would be present on the Advanced Search page for this survey and the table will automatically update to reflect the applied filters. You can also view Table Notes, which are shown here and can be hidden by clicking on the 'Notes' button again. You can also download or export the table to Excel, Print the table, or use the Map button to return to the map view of this table. We hope that you found this course informative. To be the first to hear about new Census Academy learning content be sure to sign up for email updates. Follow us social media and go to census.gov/academy.

Lesson 4:

Welcome to pathway 1.

I am Alexandra Barker. I am your instructor for pathway 1. When in lessons 4th through 8th, I will teach you step-by-step how to access PL 94171 restricting data from the Census Bureau's file transfer protocol site, or FTP for short. You will learn about the resources that you need in order to access the redistricting data files from the Census Bureau's file transfer protocol site, or FTP site for short.

These are resources that you need to have handy before you start working with the data.

You will also learn where to locate these files for download and how to import them into Microsoft Access. Then you'll learn how to extract the data and set up for analysis.

We will go over examples of how to work with each of the four files that make-up the P.L. 94-171 Redistricting Data Summary file. In Lesson 4, we will explore the Redistricting Data Program webpage.

This is where you find critical resources for using this data. Next, you'll learn how to locate the files for download. Then we will review the technical documentation about this data,

specifically, regarding how to identify geography codes in the metadata.

Next, we will learn more about the prototype data, legacy format summary file 2020 style

that we will be using for this tutorial with a Microsoft Access database shell. To locate the 2020 Census Redistricting data files for download along with the documentation that will help you successfully use this data, you can click on the link available in the description of this video,

or visit [census.gov](https://www.census.gov) and use the search bar to search for Redistricting Data PL 94-171 and click search.

Let's use your first search result. Now you are at the Decennial Census PL 94-171 Redistricting Data page. On this page is where you find the Redistricting Data files for download for the 2020 Census, the 2010 Census, and the 2000 Census. To locate the files for download, scroll down and find the legacy format summary files hyperlink. Through this link, you will be able to access redistricting data tables for each state, down to the block level. So, let's click on the legacy summary files link. Here at the FTP site, you'll find the folder for the redistricting file PL 94-171. You just have to open this folder and you'll see all the files for each state.

They are ready for you to click and download. Next, we provide you with several resources that are critical for your success using this data. First, let's review the technical documentation.

Click on the 2020 Census State Redistricting PL 94-171 summary file technical documentation link to open the PDF document. This document includes every information you would need to know to successfully use the redistricting files. I want to highlight two major areas that I use very often. One is Chapter 4, Summary Level, basically geography. In Chapter 4, you'll find a complete list of all the geographies that you can use to access redistricting data.

As you can see, every geography or summary level has a code associated with it. In Lesson 2, Mary went over this subject.

With this resource, when you extract the files, you can use this code to indicate what geography you wanted the data for. For example, if you are looking to access data for the tract level, all you have to do here is identify the code for tracts.

In this case, it would be 140, and the data that you'll be extracting will be for census tract for the state you selected. Next, let's take a look at Chapter 6, The Data Dictionary. I will highlight the table matrix section. This is very important because it gives you the metadata for the data you are about to extract. Once you extract the data, you notice that every column is labeled with a code. Here is where you see the metadata for each code, so when you look at data for column P0010004, you know it's about Black or African American alone.

In Lesson 8, I will show you how you can add the metadata to the data you just extracted from the redistricting files. Let's go back to the main page. Now, under Legacy Format Support Materials, you can access the header records. Let me show you what this is all about.

This document gives you the definitions of all abbreviations and codes that are included in the datafile. For instance, in regards to the Geoheaders, if you have a column called SUMLEV, you know it means summary level. Another important part of the metadata is to know what the topics are within each table, so click on the tab for segment one, which corresponds to file one.

So, when you open your data, like I mentioned earlier, looking at the technical documentation,

the label of each column is a code. On this tab, you'll be able to see the metadata for that column, basically you'll learn the topic on the data provided for that field header.

Next, we have the frequently used geographic summary level codes.

We created this document to make it easier for you to work with census geography.

Here you see the most used summary levels or geographies for accessing redistricting data.

In Lesson 7, we will go over an example of how to use these codes to change the geography for the data you're about to extract. Next, we have the Microsoft Access database shell that you can download and use to extract the files. We already set up a few queries for you to facilitate your process in extracting the data. We're going to review this in the next lessons.

If you're using SAS as your statistical software, you can import the scripts, and if you're using R, we also have the scripts here for you. Last, we have a guide on how to use Microsoft Access database shell. Together, we'll be going step by step through this guide as we learn how to extract the data and use it in Microsoft Access. Regarding geography products, if you'd like to create maps using this data, here is where you go to download your shape files.

Now, let's go back to the Redistricting Data Program page and visit the Redistricting Data Program Management page. In this page, you'll be able to learn in more detail about the five phases of the redistricting program. Here you also can access the prototype data that we will be using for our tutorial today. This is a great resource to practice how to download and extract

redistricting data files. Keep in mind that for the purpose of this tutorial, we'll be using datafiles from the 2018 Census Test that took place in Rhode Island. We will also be demonstrating using it with Microsoft Access.

However, like Mary pointed out in Lesson 3, if you don't have Microsoft Access, you can extract the data using R, SAS, Python, SQL, SQLite, Oracle, or any other statistical software.

Before we learn how to download these files, let's first learn about the datafile structure and segmentation. When downloading the redistricting data, you'll be downloading four files. Geographic header file, File01 that will contain tables P1 and P2. These are population tables, File02 will include tables P3, P4, and H1.

So, population data as well as housing, and then File03 which is table P5 for group quarters population. In Lesson 2, you review what topics are available from each of these tables.

When using these files in Microsoft Access, you notice that the names of these files are now

2020 PL Geoheader, 2020 PL Segment 1 in reference to File01. Segment 2 will be your File02,

and Segment 3 for File03. Note, that each state will have four files containing data from the state to the block level, so when you are downloading these files, you will be able to select the state you want to download them for, and automatically, it will download the four files for you.

Once you import the data into a statistical software, you'll be able to use a geographic code to select which geography or summary level you want to show this data for.

As a recap of Lesson 4, the 2020 Redistricting Files are available in the Redistricting Data Program page and again, can be accessed under Decennial Census PL Redistricting Data Summary Files, right where this hyperlink is located, along with all the supporting materials.

Lesson 5:

In Lesson 5, you'll learn how to download the redistricting files and the Microsoft Access database shell. Remember that for this tutorial, we'll be using the prototype data from 2018. However, everything that we'll be doing here, you can replicate with the 2020 census data. In order to demonstrate how to download the data, we use prototype data produced from the 2018 end-to-end census test, but this same process will work for any state using the 2020 redistricting files. This example will use Microsoft Access, 2020 PL Summary File database shell that we'll download from this page.

This shell includes three examples of queries for you to extract data for blocks,

counties, and county subdivisions. Even though we only give you queries for three summary levels, you can use the geography codes that we showed to you in the previous lesson to change the geography or summary level for each of these queries. When working with large states like California or Texas in Microsoft Access, all four files cannot be loaded into a single Microsoft Access database because of the software file size limitation, and this limitation can be overcome by loading both the Geoheader and one data segment into separate databases, and then you can repeat for each data segment to generate basically three databases.

Let's start by downloading the Microsoft Access database shell. You need to unzip your file, so like 'OK' to open with WinZip. Open the zip file, and select the option Yes, unzip the files to a folder I choose. For this demonstration, I'll save the files in My Downloads folder. Now click 'unzip' and you can close the WinZip.

The next step, it should download the datafiles. I'll select the prototype data, but in your case, you can go ahead and download the actual 2020 Census Redistricting Legacy format summary files. Again, the system will ask you to download your zip file, so click 'OK' to open with WinZip.

You repeat the same step, and now select Yes, unzip the files to a folder I choose. I'll again select my downloads folder to save the datafiles and I'll click on unzip. In this example, we did use WinZip to extract the files, but you can use any other software package or even Microsoft Windows to unzip these files.

These files must be unzipped before beginning the importing process. So, once you unzip the files, you can navigate to the folder that contains your unzipped files. In this case, it would be My Downloads folder. Your Windows environment must be set to show the file name extension, so if you click on View. Just make sure that the file name extension box is checked. The next step, it's a very critical step, is that all file extensions must be changed to a text file, so this is what we're going to do. You click on the file, click Rename, and then change the PL file to a text file by replacing .pl with .txt and pressing Enter. We want to make a change, so it's yes, and now we have a text document, so you have to change every PL file to a text file.

Now all my files are text documents. The next step is to open the 2020 PL Summary File shell.

Once you open the summary file shell from Microsoft Access, you see the placeholder tables for the Geoheader and the three data segments.

Remember the data structure. This is file 1, file 2, and file 3. This has population data from tables P1 and P2, population data from tables P3 and P4, and housing data from table H1, and here the group quarters population data from table P5.

You also see three examples of queries. One is for blocks, one for counties, and one for county subdivisions. So, you now have downloaded your data. The next step is to learn how to import the data.

Lesson 6:

In Lesson 6, you will learn how to import your data files into Microsoft Access to build your database. To import your data into Microsoft Access, click on External Data. Next, under New Data Source, select the option From File and then next, Text File. Because remember, we modify the format of the file to txt, text file. Use the Browse button to navigate to where the files are located and then select which file you wanted to bring into this database.

I saved the files in my Downloads folder. Here they are. Before you import each individual file into a table shell, it's important to understand the convention name of your file. This file is for Rhode Island. So, you see the abbreviation of the state. Next, you're going to look at a data segment. In this case, it's Segment 1, Segment 2, Segment 3 for the year 2018. Let me show you why this is important. I'm going to click on Rhode Island, Segment 1 for 2018.

Now that I have the file here, I need to make sure that I click on Append a copy of the records to the table. And I select Segment 1 here because this file is created for Segment 1. Now we can click OK. Next, click on the radio button next to Delimited in the Import Text Wizard. And then click Next. For your next step, click on the radio button next to Other. And this is how you're going to delimit the spaces in each field. We're going to type the Pipe character. To type the Pipe character, you have to hold down the Shift key and click on the Backslash key. And now we can click finish.

When the import process is complete, you can click on the Close Button. But you can also select Save, and you will save all the import steps up to this stage. This is not required, but it's definitely helpful. I won't be saving my steps right now because I want to demonstrate again how to import using Segment 2.

So I'm just going to close. And at this time, you can go along with me by pausing this video for every step I guide you through. So, open your shell for Microsoft Access. Have your files downloaded and saved in the proper text format. And let's import into the shell. Click on External Data. Now go to New Data Source, From File, Text File. Use the Browse button to select the location where your files were saved. Select your file. In my case, I will go with Segment 2. Click Open. On the Import Wizard, select Append a copy of the records to the table.

And make sure to select the correct table. In this case, I'm using File 2, so I'm going to use Segment 2. Click OK. Next step in the Import Wizard is to click in Delimited, click Next. We're going to choose the delimiter. In this case, will be other, so click in Other. And add the Pipe character. Again, you press Shift and then the Backslash key on your keyboard. Click Next. And you are ready to import Segment 2. Click Close. I will repeat this step to import the remaining data segment in the Geoheader. Please remember that

when working with large states like California or Texas, all four files cannot be loaded into a single Microsoft Access database due to a Microsoft Access file size limitation. And this limitation can be overcome by loading both the Eggheaded and one data segment into three separate databases, each one containing the Geoheader and a single data segment. You have now completed the import process of your data and created your own database to start working with the queries. Next, you'll learn how to extract the data, use the query, and also export your data.

Lesson 7:

In Lesson 7, you'll learn how to extract the data, how to use the pre-created queries, and also how to customize the queries. Last, we'll learn how to export the data. The 2020 PL Summary File shell has the relationship between the tables needed for extracting the data already established for you. In addition, there are three example queries, one for blocks,

one for counties, and one for county subdivisions. To check these relationships are indeed established, click on the Database Tools menu and then 'Relationships' button. If the relationships don't show right away, click the 'All Relationships' button. You should see tables with connections showing by black lines between the common fields, so let's bring the Geoheader to the center to make it easier for you to see that every segment is connected to the GeoHeader, so, the relationships are established here.

Now to pull the data from the database you just built, it's necessary to construct a query.

The Microsoft Access Database shell has those three examples queries already built in for you.

The first pulls block data from data Segment 1. The second pulls county data from data Segment 2. The third pulls county subdivision data for data Segment 3. To modify one of these queries, right click on the query and select Design View. Here you can change the summary level, SUMLEV -- that's the abbreviation we use -- to change the geography or any additional data fields you want to see in the final extractable tables, so your final result. This example will look at the block query.

In the Design View window, you see the tables in the area at the top and then the selected field from those tables in the fields below. To add fields to the query, double click the desired field in the table in the top window. As you can see by clicking on the asterisk, Segment 3 is now showing on the table viewer. In this query, we selected the block level data by selecting the summary file field SUMLEV from the Geoheader, and then setting its value to 750, the code for blocks.

This is how we set the query for you. These summary level codes, or geography codes can be pulled from the summary level sequence chart in the technical documentation, which I demonstrated to you in Lesson 4. So, if you go back to the resources on the

Redistricting Data Program Management Page, you'll find a list of codes, and you can change them here.

750 is the block level. For instance, if I would like to see this query produce data for the tract level, I can check the Frequently Used Geographic Summary Level Codes document

and switch the criteria to code 140. To view the results of our constructed query, we click the View button located right on the top left of Microsoft Access.

You should now see the table with all the fields you added in the Design View process. For this example, we only add one field from Segment 3. We did not change the geography code, but now if you look through the table that are created for Segment 1 which is File 1.

That would include tables P1 and P2, so you can see here we have all the P1 data and next the P2 data being populated here, and we added Segment 3 which is the group quarters from P5 table, and you see it towards the end. You can now save and close your query for future use, or you can go back into Design View to adjust any fields and summary levels, geographies that you'd like to extract. Before we learn how to export this table, let's work on Example 2.

This is a great opportunity for you to follow along by pausing the video for every step and working at your own pace. First I'm going to close my example for query 1, for blocks,

and I'm not going to save for the purpose of this tutorial. I am back to the Design View.

Start by selecting the Example Query Data Segment 2 Counties,

and select Design View. If you do not wish to customize a query, you don't have to go to Design View. You can simply click on Open and view your query result. In this case, we're going to go back to Design View so you can practice this part of the steps. Design View, and for this query, let's add again Segment 3, so in the relationship screen, let's click on asterisk on Segment 3. Double click, and again, it is included as part of your query.

Now the next step is to view your query, so on the top left corner, click on the View button.

Now you're visualizing your query for the county in the state that you download data for.

In this case, I'm using Providence County in Rhode Island. We'll see data for table 3, table 4, and table P5 from data Segment 3. Next we're going to work on query 3.

Now I'm going to close the example query. If you do wish to save your new customized query,

you can go ahead and do that. I'm not going to save, because I will be demonstrating how to change a summary level or a geography for your next query. I'm going to use the example query data Segment 3. Please follow along in every step by pausing

your video. Click on Query Data Segment 3 for County Subdivisions. Right click, and then click on Design View.

On the query viewer, on the bottom, go to the SUMLEV column, which is the first column. The field's called SUMLEV, summary level, and for criteria, change to 140. Let's look at tract level data for this query instead of county subdivision.

Once you have made the change, we can now click on View again on the top left corner to see the result. I'm no longer getting results for sum level 060, which is county subdivision.

Our results now are showing for tracks 140 for the state of Rhode Island. The next step now is to learn how to export these results into a table format in Excel, so let's right click on the name of the query, and then select Export, and this will provide many format options for your exported table but remember that some formats may not be compatible with the size of the table that you are exporting if you selected a lot of geographies or if you have a lot of columns.

For this example, we're going to click in Excel.

Click on Browse to select where you want to save this file. I'm going to use the download folder again, and then click Save. My format will be the Excel Workbook and I will select Export data with formatting and layout. I'll also select Open the destination file after the export operation is complete, because I do want to see my file. Now click 'OK' and here is your exported query into a table format for you to start analyzing your data. In the next lesson, I will share with you some tips and tricks in how to set up your table for analysis.

Lesson 8:

On lesson 8, I will review some basic elements of your table and help you add the metadata. Last, I will go over some tips and tricks on how to set up your table for analysis. This is one of the tables that we exported from a query in Microsoft Access. What I will share with you right now are a few tricks that can facilitate your process to start analyzing your data. As you can tell by looking at this Excel spreadsheet, is that there are a lot of abbreviations in terminologies here. And we'll need to work with the metadata for each of these columns. It's important to note that if you are planning to use this table to create a map, whether using ARCGIS, Tableau, or any mapping software, or data visualization using mapping, you need to keep the Geo ID and Geocode columns on this table.

This information is critical to you when creating a map. But if you're only using this table to create a graph or chart to create percentages, it is okay to hide some columns that you no longer need. So, I will hide columns A through C. If you're not sure what these

abbreviations mean, remember to go to the page of the Redistricting Program Data Management and open the head of records. Let's use, for example, column J. On the data dictionary reference, you can see it right here, and you can now tell what this abbreviation means. Logical Record Number. It will help you determine if you need the column in place for whatever work you will be doing to analyze your data. Some statistical software will require that you keep some of these columns so they can better process your data for analysis.

Another example looks at column H character. You'll find here on the data dictionary reference, and it means characteristic iteration. So, what I will do, I will hide columns F through J. Just for this demonstration, I will keep the column containing the name of my selected geography, Providence County. If you use your query to extract data for tracts, blocks, cities, these geographies will be listed in this column. The next step now is to work with the metadata for each of the columns displaying the actual numbers.

Let's go back to our header records and now use the Segment Definitions. We are using data Segment 2 for this table; therefore, I'm going to click on Segment 2 definitions. This is exactly what we need. So, let's first identify the metadata for column K, P0030001. It is right here, and it means total. So, I can go to the header of my column and replace that code with total. Let's do the same thing here with column L. So, we're looking at the P30002, and that means population of one race. Unfortunately, we do not have a metadata file that will allow us to import the metadata in joint with these files, so you don't have to manually enter them. Another solution is to create a database after entering the metadata manually, that will continue to fill out all the spreadsheets with the metadata automatically as you create a formula that associate the code with actual metadata.

I will now continue to make modifications to the headers. Now I have modified the first few columns to include the basic race categories, and with the metadata now available for each column as well as the data, it will be much easier for you to create charts and graphs to start analyzing your data. If you'd like to learn more about how to use Excel, for instance, with Census Bureau Data, visit [census.gov/academy](https://www.census.gov/academy) and watch our Excel course.

You'll learn really amazing tips and tricks how to create charts and graphs using Excel. For this demonstration, I am going to create a chart using the race categories displayed on this table. So, let's go ahead and start by selecting rows 1 and 2 for columns M through R. Next, click on "insert." Now, just choose a pie chart for this example. It should demonstrate how you can go from downloading the data, importing, extracting, exporting, to actually visualizing so you can start analyzing your data.

We hope you found this course informative. To be the first to hear about new census academy learning content be sure to sign up for email updates follow us on social media and go to census.gov/academy.

Lesson 9:

Welcome to Pathway 2. In Lesson 9, you will first learn where to find and how to access all of the interactive 2020 Census redistricting data visualizations.

Then you will learn from a few experts from the Census Bureau about 6 different visualizations that offer unique features and topics such as population, race, and ethnicity, voting age, and housing data.

Some of them allow you to compare 2010 to 2020 decennial census data, some focus on one topic. When accessing data from a visualization, it becomes easier to identify trends within an area. To access the 2020 Census redistricting data visualizations, go to census.gov. There are a few ways to locate them. Let me show you one.

First, click on Library and then on Census Infographics and Visualizations.

All visualizations produced by the Census Bureau are available here, in the order that they were published and can be filtered by year. You just have to look through the list of visualizations published in 2021 to find them by their title.

For instance, here is the 2020 Census Demographic Data Map Viewer. Another way that I often use to located them is to go to the Decennial Census P.L. 94-171 Redistricting Data web page. All you have to do on census.gov, is to type P.L. 94 171 redistricting data on the search bar and then click on the first search result that says Decennial Census P.L. 94-171 Redistricting Data Summary Files. Select the tab 2020. Now scroll all the way to the bottom, to the section called Explaining the 2020 Census Redistricting Data. You will see that visualization is the last menu option. Click on it and you will see that all 2020 Census Redistricting data visualizations are available there.

Now, let's learn about how to use each visualization to access that for your area.

Hi, I'm Kevin. I am the chief of the Cartographic Products and Services Branch of the Census Bureau. The 2020 Census Demographic Data Map Viewer is a web map application that includes interactive maps highlighting a variety of variables from the 2020 Census. Scroll down to find the link to the application and click the link.

The application includes a series of main category tabs with the headings Population, Race alone, Race alone or in combination, Hispanic Origin, Housing, and Group Quarters. Each main category tab includes one or more maps. As you can see here, the currently selected Population tab includes a Population Density map, a Population Change map, and a Population Age 18 and Over map.

The left panel provides a brief description of the map along with a legend that describes

the symbology shown on each map. Each map shows state-level data at the default zoom level. As you zoom in, you'll see county-level data, and tract-level data. Use the plus and minus buttons on the map to zoom in and zoom out. Or you can roll your mouse wheel to zoom in and zoom out. Click a geography on the map to see the actual data values associated with it. As you zoom in, notice that the data presentation switches to county data. Zoom in further, and you'll see selected place labels appear. Click a county to see the data values associated with the particular county. Zoom in further and you'll see the data presentation switches to tract-level data.

This zoom level allows you to see sub-county patterns across most states in one or two pan actions. As you continue to zoom in, additional labels, roads, and hydrography will appear to make it easier to identify specific tracts of interest.

Click on a particular tract to see the data values associated with the tract. To load a new category of maps, click on category tab of interest. For instance, click on the Race alone tab to see all of the Race alone maps. Click on the tabs below to see a map of each race category reported in the 2020 Census. Hi, my name is Lindsay Spell, and I'm a geographer in the Population Division at the Census Bureau. Today my colleague Chris Mazer and I will be showing you a new visualization for exploring Population and Housing data from the 2020 Census. Before I start going through the features of the viz, I'm going to move into full-screen mode to make everything a bit easier to see.

The levels of geography available are states, core-based statistical areas, or CBSAs and counties. There are data for three different population variables available to select. Total population in 2020, which is the default numeric change between 2010 and 2020 and percent change between 2010 and 2020. In each view, a ranking of the geography shown will display on the right side of the viz. Though Puerto Rico will be excluded from nationwide rankings and totals. Selecting an item in the ranking table will highlight it on the map. When all CBSAs is selected, users can filter to view only metropolitan statistical areas, only micropolitan statistical areas, or continue viewing all core-based statistical areas.

You can also view CBSAs by state using the zoom feature. Just select the state you wish to view and click go. This will show you all CBSAs with any portion in that state. As you can see with Idaho, some CBSAs cross into other states. The last features I'm going to highlight are at the county level. In this view, you can search for a specific county in the search counties box, and it will highlight on the map and in the ranking table.

You can also filter the ranking table by population size, so if you only want to see counties with a 2020 population size of 1 million or more, this is how to create that list. The last feature I will show you is similar to the state zoom shown in the CBSA section, but in this view, it zooms to all counties by state. So here, we can look at all three population variables by county for California. Next, Chris will walk you through the housing data available in this viz.

Thanks for all that great information, Lindsey. Hi there, my name is Chris, and I'm a statistician for the Census Bureau's housing statistics branch.

As the branch name implies, I work with data related to housing units.

Believe it or not, the Decennial Census not only counts the total population in the nation but also counts the number of housing units. Examples of a housing unit are a detached single-family home, a townhouse, an apartment, or a mobile home. The Census counts all houses whether they're occupied or vacant. You can see the tool has three topic buttons related to housing.

Housing units in 2020, housing unit vacancy rate in 2020, and the percent change in housing units between 2010 and 2020, and for all three topics, you can continue to filter on specific geography levels the same ways as Lindsay demonstrated earlier.

When we select the housing unit's topic, a map in the center and a ranking table to the right will appear. The map provides information about housing unit density or how many houses are in one square mile within a geography.

You can hover over or click on a state to learn what the actual housing unit density is.

When we select Maine, for instance, we learn there are 24 houses per square mile in this state. By clicking the state again, the map for all states will reappear. Let's now select the percent change in housing unit's topic to see which areas grew the fastest in terms of housing units from 2010 to 2020. If we wanted to see these growth rates at the county level, click on the all counties button on top.

The ranking table to the right tells us that McKenzie County, North Dakota, expanded its housing stock at the fastest rate of any county in the last decade with a 147.9 percent increase in housing units. The final housing-related topic in the tool is housing unit vacancy rate. The housing unit vacancy rate is the percentage of all housing units in a given geography that are vacant. That is, nobody is living in the house. After selecting the housing unit vacancy rate topic, the map and ranking table continue to show all counties since we have not changed the geography level from our previous topic.

I'm going to show you how you can use our visualization to find data for racial and ethnic groups for the nation, your state, and your county based on the 2020 Census Redistricting data. The visualization has two topics: Race by Ethnicity and Hispanic Origin. The Race by Ethnicity topic allows you to first select a race alone group, race in combination group, or race alone or in combination group. More information about these topics is located at the bottom of the page. Selecting the Hispanic Origin topic allows you to find data for the total Hispanic or Latino population or the total Not Hispanic or Latino population.

Race by Ethnicity is currently selected when you open the viz.

The visualization is organized around three questions:

What percentage was each group in 2020?

How has each group changed since 2010?

And what are facts for my state or county?

The first question includes a map and a rank chart for the selected group. Let's select Black or African American alone, for the Total Population. If I change the second filter to "Hispanic or Latino" for instance, the dashboard then shows the percentage of the Hispanic or Latino Population, who identify as Black or African American alone. To find information for your county, use the filter on the right to select a state, DC, or Puerto Rico.

Let's choose Maryland and click the arrow.

Here, we can see that Prince George's County has the highest percentage of people who identify as Black or African American alone. On the right, we can highlight a county, change the state or return to the national view. Clicking on the second question will change the statistics shown on the rank chart and map. Now, we're viewing percent change, which represents the degree to which the group increased or decreased from 2010. Clicking on the last question, will take you to the data table page.

Here, you can compare statistics for the Nation, a state, and a county within that state. To do this, change the group and geography filters. And click the arrow.

If you want to change the group, but not the geography, note that you will still need to click the arrow to change the table.

Hi, I'm Megan Rabe. I'm a demographer and visualization developer in the Population Division at the Census Bureau.

This visualization has four sections: Diversity Index Maps, Race and Ethnicity Prevalence Rankings, Race and Ethnicity Prevalence Maps, and Data Tables.

The current selection is the Diversity Index Maps. To measure the probability that two people chosen at random will be from different race and ethnicity groups.

In 2020, that was a 61.1% chance in the United States. For more information about calculating the diversity index, hover over the note at the bottom of the page.

The map shows the diversity index in 2020. Hovering over a state shows the distribution of racial and ethnic groups. Clicking on a state in the map will highlight it in the rank chart. You can also change the filter to view the data for 2010. To find information for your county, use the filter on the right to select a state, DC, or Puerto Rico.

Let's choose Nevada and click the arrow.

Here, we can also highlight a county change the state, or return to the national view.

Race and Ethnicity Prevalence Rankings are next. Prevalence ranking graphs show the percentage of the population that fall into the largest racial or ethnic group, second largest racial or ethnic group, and third largest racial or ethnic group.

The diffusion score measures the percentage of the population that is not in the first, second, or third largest racial or ethnic group. You can change the year to see differences between 2010 and 2020. Next, are the Race and Ethnicity Prevalence Maps. Prevalence maps show the geographic distribution of the largest, second largest, or third largest racial or ethnic group at a specific geographic level. The filters on the right allow you to highlight a county or a racial or ethnic group. Maps are available for 2020 and 2010 and for the largest, second largest or third largest racial or ethnic group.

The last section allows you to see the data in a table format. This includes county ranking for both 2020 and 2010. Change the filters at the top and click the arrow to update the tables. I'm excited to show you where you can find statistics on the adult and under age 18 populations for your state and county based on the 2020 Census Redistricting Data.

I'm going to click on the "full screen" button on the bottom of the page to make the data viz a bit bigger. The visualization includes answers for three questions:

What percentage was aged 18 and over in 2020?

How has the population aged 18 and over changed since 2010?

And what are facts for my state or county?

The currently selected question includes a map and a rank chart, showing a percentage of the population age 18 and over in 2020. Hover over the percentage for the United States to view more information for the nation. To find information for your county, use the filter and arrow button on the right.

Let's take a closer look at Illinois, for example. Here we can see that Kendall County had the smallest percentage of adults in Illinois at 71.2%

We can also highlight a county, change the state, or return to the national view.

Clicking on the second question will change the data shown on the rank chart and map.

Now, we're viewing percent change, which represents the degree to which the adult population increased or decreased from 2010. Clicking on the last question, "What are facts for my state or county" will take you to the data table page.

Here, you can compare statistics for the Nation, a state, and a county within that state.

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Lesson 10:

Welcome to Pathway 3

In lesson 10, you will learn from Census Bureau expert Maria Valdisera. About how to access 2020 Census redistricting data using data.census.gov. Maria will also show you how to customize your tables, create thematic maps and download data for all available geographies.

[Data.census.gov](https://data.census.gov) offers the most comprehensive method to access and use 2020 Census data. Data are offered in a tabular format but can also be viewed using a map. It allows you to select a variety of geographies for all 2020 Census topics as individual tables. So this resource may be helpful if you are looking for a particular topic for specific geographies from the available redistricting data tables.

Hi I'm Maria Valdisera. And I work for the Dissemination Outreach Branch.

The users may want to access the new redistricting data to view the population and housing counts for their community. To do this, navigate to our site at data.census.gov and click on the Advanced Search button located directly under the Single Search bar. Once you click on that link, you will see a list of filters on the left side of the screen.

To access the Redistricting Data, click on the 'Surveys' filter and select the 'Decennial Census' option. Then, scroll down the list until you see 'Redistricting Data' with 'PL 94-171' in parentheses. Click on the checkbox directly to the left of this survey title. Since we only want the newer tables from 2020, go to the 'Years' filter and select '2020' from the list. Then, select the geography you want to view.

For this example, I will use the city of Atlanta, Georgia, so I'll click on the 'Geography' filter, and then scroll until I see the 'Place' geography. The 'Place' geography filter helps identify data available for cities and towns. So, after we select 'Place', we will choose the state that our place is in. Since Atlanta is in Georgia, you will click on 'Georgia' and the page will advance to show all places in Georgia. Since this is quite an extensive list, I recommend using the search bar that is available at the top of the panel. If you click on the magnifying glass icon in the top right corner of the panel labeled 'Georgia', a search bar will appear, and you will be able to search for places within Georgia.

If I start typing 'Atlanta' into this search bar, the panel will automatically update to show places in Georgia that match my search term. Then, I'll click on the checkbox directly to the left of 'Atlanta city, Georgia', which should appear at the top of the list. Once those filters are applied, click on the 'Search' button, located at the bottom right corner of the screen directly to the right of the 'Clear Filters' button. Tables P1, P2, P3, P4 and P5 contain population data, and Table H1 contains housing data. In this example, I will click on Table P1, 'Race', to view population data for Atlanta broken down by race for the total population, and then return to the results page and click on Table H1, 'Occupancy Status', to view the occupied and vacant housing counts for Atlanta.

But what if we want to view and download data for smaller geographic areas, such as Census blocks? If we want to find Redistricting Data for all Census blocks within a county or state, we can start another search by clicking on the US Census Bureau logo in the upper left corner of the screen and hitting the Advanced Search button. Since Census blocks are only available for the Decennial Census, we will only need to select our geography in this search. For this example, I selected Census blocks from Rockingham County, New Hampshire. Like our other searches, you'll click on 'Geography', and then 'Block'. Scroll down the next list of states and select 'New Hampshire', and then click on 'Rockingham County, New Hampshire' from the county list. Next, you'll need to select the Census tract. For this example, I chose 'Census Tract 1001' from Rockingham County. The last step is to select the blocks you wish to view. I just selected a few blocks towards the top of the list. Then, click on the 'Search' button. Select any table to view, for this example I again chose table P1, 'Race'. To download

the table to your computer, click on the 'Download' button on the top left side of the screen above the table list. This action will prompt empty checkboxes to appear beside each table name in the list on the left side of the screen. You can select multiple tables to download at once, but for now, let's just select table P1. Once that table is selected, scroll up to the 'Download Selected' button at the top of the list and click on it. A pop-up menu will appear confirming that you're downloading the 2020 Redistricting Data as a CSV file. Once you click the Download button in the lower right corner of the screen, you'll receive a message stating that the site is preparing the files.

Once that is done, hit the Download Now button. This will download the .zip file to your Download folder on your computer. Once you click on the download folder, you may be prompted to unzip the contents of the .zip file to one of the file folders present on your computer. I want to unzip the files to my 'Downloads' folder, so I'm going to click on 'Yes, unzip the files to Downloads'. Next, I'm going to navigate to the download folder and open the file that has "data with overlays" in the naming convention and select the file to open in Excel. Now that I've clicked on that file and have finished waiting for it to open in Excel, I can see the data available for the Census blocks I've selected in the Excel file.

You can also find and map PL 94-171 data through data.census.gov. Let's say you want to find group quarters data by congressional district in your state. Again, we would click on the US Census Bureau logo and go to the Advanced Search. Select the Survey 'Redistricting Data (PL 94-171)' from the 'Decennial Census' category. Next, let's select congressional districts in Illinois for this example. Through the 'Geography' filter, you will select 'Congressional Districts' and then 'Illinois' as the state. Then, select 'All Congressional Districts for the 116th Congress in Illinois' and click the 'Search' button as we did in our previous example searches. For this example, I chose table P5, 'Group

Quarters by Major Group Quarters Type'. This is an additional table that was added to the 2020 Redistricting Data. Once you choose table P5, click on the 'Maps' button that is on the top left side of the screen above the table list. This will show a map that will zoom in on the state of Illinois and display the 116th congressional district boundaries for the state of Illinois. The map will automatically default to show the 2020 PL Total Group Quarters Population of each Congressional District. To change the data variable that the map is showing, click on the arrow directly to the right of the 'Total' button, which is located on the top left side of the page above the map view. From there, you can scroll down the list and select any of the other variables that are present in the table to view within the map. You can also use the search feature directly above the list to find a particular data variable. For example, if I want to find a data variable that contains the word 'student', I can type 'student' in the search bar and then select the variable 'Total: - Noninstitutionalized population: - College/University student housing'. Notice that the map updates with data for the new variable I selected, and the map now shows that Congressional districts in darker shades of blue have a higher number of students who are living in college or university housing.

With the release of the 2020 Redistricting Data, you'll also be able to compare data from the 2010 Redistricting Data as well. To do this return to the main landing page and then click on the 'Advanced Search' button again. From there, select the 'Redistricting Data' option again through the 'Survey' filter panel. Next, select the geography you wish to view. For this example, let's choose all counties within the state of Alabama. To do this, go to the 'Geography' filter and select 'County'. Then, select the state of 'Alabama'. In the next filter panel, select 'All counties within Alabama, which is located at the top of the list, and then click on the 'Search' button on the bottom right corner of the screen.

There are five tables that will appear in the results page that are available for both 2010 and 2020. For this example search, I chose table P3, 'Race for the Population 18 Years and Over'. Once we click on the table, it will automatically default to the most recent 2020 data. To toggle between the 2010 and 2020 data, navigate to the 'Product' dropdown menu located at the top of the screen above the table. When you click on the downward facing chevron, you have the option of viewing either the 2010 or 2020 Redistricting Data. When you click on the 2010 option, the table will automatically update to show data from 2010. You can toggle between 2010 and 2020 to compare the data directly and can see the changes in the geographies you've selected.

In this final example, let me show you a few features that will allow you to customize PL 94-171 data tables in the table view. We will return to the Advanced Search page once again and select our 'Surveys' and 'Years' filters. Then, click on the Search button and select a table to view. For this example, I chose table P4, 'Hispanic or Latino, and Not Hispanic or Latino by Race for the Population 18 Years and Over'. Next, click on the 'Customize Table' button located at the top right corner of the screen above the table. This new view, which is called the 'Customize Table view,' is where you can access a lot of different functionality by clicking on the buttons in the ribbon located above the table. For example, the 'Customize Table' view provides another way to add additional filters to the table. You can select any of the Filters that would be present on the Advanced Search page for this survey and the table will automatically update to reflect the applied filters. You can also view Table Notes, which are shown here and can be hidden by clicking on the 'Notes' button again. You can also download or export the table to Excel, Print the table, or use the Map button to return to the map view of this table.

Lesson 11:

Welcome to pathway 4. In this pathway, you'll learn from Census Bureau experts about how to create a call for the Census Bureau API to pull 2020 Census Redistricting data. The API enables developers to call customized data sets that feed into web or mobile apps. Many of our own Census Bureau tools and apps utilize our API, data.census.gov is a great example of this. There are two lessons in this pathway in lesson 11 you will learn how to pull individual estimates. Lesson 12 will teach you how to pull an entire table using a group call. In lesson 11 we will review the resources available for the

Redistricting Data API including the geographies, variables, examples of queries and documentation links. Next, we'll review the base of an API query followed by step-by-step instructions for using the API to find individual estimates from a table.

Hi, I'm Jessica and I work in the Dissemination Outreach Branch. Today I want to show you how to access 2020 Public Law 94-171 Redistricting Data through the Census Application Programming Interface, or API.

We've developed this video tutorial to help you find the PL-94171 redistricting data using the census API.

Let's say that I want to find the population total for people who are of one race for the state of Indiana. When I look in data.census.gov, this information is provided in table P1. However, as we can see, table P1 is a pretty big table, and I only need data for this top portion of the table, for the population of one race for each race group in Indiana. Ideally, I would be able to filter out everything except for the handful of rows of data that I need.

This happens to be one of the benefits in using the Census API – if I want, I can pull data for the variables that I need, instead of pulling data for the entire table.

So how would I accomplish this using the Census API? First, we need to access the 2020 Decennial Census API. We'll use our API Discovery Tool to do this.

Go to <https://www.census.gov/data/developers.html>. Then at the top, under the Developers heading, click on the link to the Discovery Tool. You have three different options for using the API Discovery Tool. I prefer to use the html version, so click on the first link-the one for api.census.gov/data.html.

This lists every dataset that's available through the API, for every year that it's available. That makes for a lot of data!

Let's hit the Ctrl and F keys to open the search functionality and search for Redistricting. The first matches are for the 2000 Redistricting Data. Let's click through those. Then we get to the 2010 Redistricting Data, and we'll continue to click through those.

Finally, we'll reach the 2020 Redistricting Data. It should say Decennial Census: Redistricting Data (PL 94-171) in the very first column and 2020 in the third column.

Now let me show you a little trick for isolating the information for the dataset that you want, rather than having to go through this each time you want to go to the 2020 Redistricting Data.

In the fourth column, you'll see that it says dec, pl, separated by a greater-than sign. We'll use this information to isolate the dataset. Navigate up to the top of the screen, put the cursor right after the word 'data,' and enter a forward slash.

Then type in 2020, which represents the year that we are using, and then /dec/pl. Once you are done, the URL should say `api.census.gov/data/2020/dec/pl.html`.

Hit Enter. Now you just have the API information that's directly related to the 2020 Redistricting Data showing on the screen.

Let's take a moment to go over the different links that are available for this API. The first link is for geographies.

If you click on that, you'll find all the geographies that the 2020 Redistricting Data is available for. We happen to need data for Indiana, and we can see from the fourth line that this data is available for states.

If we click on the back arrow, and then click on the variables link, we'll find all of the variables that are available in the 2020 Redistricting Data.

Let's make a mental note about this page, as we will come back to it shortly in order to find the variables that we need. For now, let's click on the back arrow and click on the groups link.

This lists the six tables that are available from the 2020 Redistricting Data. Knowing this information is useful if you wanted to pull an entire table, like all of P1, rather than one or more individual pieces of data.

Let's click on the back arrow again and move on to the examples link.

This page is extremely helpful because it provides you with example API queries that you can use for each available geography. We'll take a closer look at this page again soon. Click on the back arrow again and click on the documentation link. This will take you back to the Developers page where you can find more information on the Census API.

And, if we click on the back arrow a final time, we'll see the base API query that is used for the 2020 Redistricting Data. As you use this Redistricting Data API, you'll notice that every API query starts with this same base URL. Now let's get into actually using the API. Navigate back over a few columns and click on the same variables link that we selected earlier.

Again, this is showing us all of the individual variables that are available for selection from the 2020 Redistricting Data API.

We already know that we want the variables that are associated with one race. In particular, we're looking for the total number of people who reported one race and the total number of people who reported being White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, or Some Other Race alone-altogether, we're looking for seven individual numbers.

If we look at the variables page again-particularly the right-most Group column--and scroll down, we'll come to the section of variables found in table P1. This looks promising, so let's take a closer look.

The first variable is P1_001N, which represents the total number of people. The '001' portion of this variable name indicates that it will provide results for the first row of data in the table, and the 'P1' portion indicates that this is for table P1.

If we look back at the table in data.census.gov, we'd see that this is the variable for the very first line of the table. This is definitely important data, but it's not one of the numbers that we are specifically looking for.

Returning to the list of available variables, we can see that the next variable is P1_002N, which is for the total population of one race. This does happen to be one of the variables that we want, so I'm going to make a note of that variable name, P1_002N.

If I continue to look down the variable list, I can see that variables P1_003N through P1_008N are the other variables that we want to use. Each of these provides data on a different 'alone' race group.

Just to confirm, if we look at P1_009N, we can see that it's the total for people who reported two or more races, and that's not data that we need. So now that we have the seven variables that we need that represent the numbers that we want from the table--P1_002N through P1_008N--let's jot them down.

Now that we have those noted, let's hit the back arrow and click on the examples link--again, this is one that we clicked on earlier. We need this data for Indiana, so we're looking for the state geography.

Lucky for us, this happens to be close to the top of this page, in the fourth section labeled 'state'. As we can see, there are two example API queries in this state section.

The first one includes an asterisk. When looking at API queries, an asterisk indicates that all geographies will be included. In other words, when we see that this particular

query includes &for=state with the asterisk, we know that it will run the requested query and return data for all the states in the US.

The second query, on the other hand, does not have an asterisk, but instead has a two-digit number. This two-digit number is the state Federal Information Processing System, or FIPS, code. The state FIPS code included in this query, 06, is the code for California. We need to find the state FIPS code for Indiana, though. The easiest way to do this is to run the first query-the one with the asterisk. Let's right click on that and click 'Open link in new tab.' Now we can see a list of all the states and each one has a two-digit code next to it. This two-digit code is the state FIPS code. We can confirm this by looking at California-the code next to it is '06.' Let's find Indiana...and it looks like the state FIPS code for that is 18, so let's make a note of it.

I'd like to note that you can also find a complete list of FIPS codes by going to our geographic reference files, which are linked below.

Let's return to the API examples page that we were looking at earlier. Since we just want Indiana, it makes more sense to use the second API query where we'll enter the single state FIPS code, rather than use the first query which would give us data for all the states in the US. So, let's right click on the second query and select 'Open link in new tab.' As you can see, it has opened the query in a new tab and we already have output available.

As it stands, this query is just giving us the name of the state, along with the state FIPS code, and not any data.

Modifying the query to include the variables we need is pretty easy, though. Go to the get= portion of the URL and put the cursor right in front of the NAME variable. Type in the variable names, all separated by commas-make sure you don't include any spaces-and then add a comma after the last variable name in order to separate it from the NAME portion. For the sake of time, I've already copied the variables that we need and I can quickly paste them into the URL. As you can see, when we finish, this portion of the query reads

get=P1_002N,P1_003N,P1_004N,P1_005N,P1_006N,P1_007N,P1_008N,NAME. The geography portion reads &for=state:06.

Now let's hit Enter just to make sure the query is still running correctly and giving us the data that we are expecting. And it looks like it worked just fine-we have all seven numbers.

But these are still for the state of California. We need to change it to Indiana. Let's navigate back up to the API query and replace '06' with '18', which is the state FIPS code that we determined earlier is for Indiana.

Once we've changed that, let's hit Enter again.

Now we can see that we have all seven numbers for Indiana. The first number is 6,348,802, which is the total number of people who reported one race (which corresponds to variable P1_002N); 5,241,795 is the total number of people who reported being White alone (which corresponds to variable P1_003N); 648,513 is the total number of people who reported being Black or African American alone (which corresponds to variable P1_004N); and so on.

We end with the number for P1_008N, 261,312, which is the total number of people who reported Some Other Race alone. Then we have the name of the geography we're looking at, which is Indiana, along with the state FIPS code for Indiana, which is 18.

Now that we have this data for Indiana, let's say that we need data for the same variables, but for a different geography, like all the blocks in Rhode Island. Since we've already prepared the query for Indiana, the only thing that we'll need to do at this point is swap out the geography portion of the API query-this is the part that says '&for=state:18'.

Let's go back to the 2020 Redistricting Data API examples page-the one found at api.census.gov/data/2020/dec/pl/examples.html. We need to look for the queries for blocks. It happens to be the eighth section from the top, labeled as 'state > county > tract > block.' Whereas we only had two queries to choose from for states, we now have four queries for blocks. Although there may not immediately look like there are a lot differences between them, there are differences.

The first query is going to give you all the blocks in a particular county within a particular state. The next one will also give all of the blocks, but they will be for all counties within a particular state.

The third query is almost identical to the first one, in that it will provide data for all the blocks in a particular county within a particular state, and, as it is currently defined, it will actually run the same data. There are instances where using one of these queries over the other is preferable, but we won't cover that right now. Moving on to the fourth and final query, this one will run data for one specific block in a particular tract found within the given county and state.

Comparing these queries against our need for data on all the blocks in Rhode Island, it looks like we'll want to use the second query which will provide data on all blocks in all counties within a state. Let's right click on this second query and select 'Open link in new tab.' Once it's done running, we can see that it provides the names of the different blocks in California-and we know it's California because it's using the state FIPS code of '06.'

Recall that we still have the query open that we used to get data for the state of Indiana and all we really need from this block query is the geography portion. To grab this, highlight the portion of the URL that begins with '&for=block' in its entirety, all the way down to '&in=tract:*', right click on it, and hit Copy.

Now let's go back to the query that we were using earlier for Indiana. Highlight the very last part of the URL, the part that says '&for=state:18', right click on it, and hit paste. This should swap out the old 'for' statement for Indiana with this new portion that's currently for blocks in California. For now, you can just click out of it and it shouldn't start running. If it does start running the query though, don't worry—just let it run, and once it's done running, you can continue with modifying the query. We can see that this is still for California, so we need to change it to the state FIPS code for Rhode Island.

Using the API query that we ran earlier that provided us with each state and its respective FIPS code, I can see that the FIPS code for Rhode Island is 44. So now let's go back to our query and change the '06' portion to '44.' Once that's changed, now we can hit Enter to run the query.

It may take a few moments longer to run this query than it took to run the last one for Indiana, given that we are looking for more information. However, once it's done, you can see that it's provided data for all the same variables that we wanted for all the blocks in Rhode Island.

Using the Name field, we can quickly see that this first line is for Block 2004, in Block Group 2, in Census Tract 515.03, in Washington County, Rhode Island. We start off with the data for variables P1_002N through P1_008N, and end with the unique codes for the state, county, tract, and block.

As you can see, once you get the hang of it, the Census API can provide a very quick and easy way to get the data you need. I hope this tutorial helps you in finding the 2020 P.L. 94-171 Redistricting Data through the Census API.

Lesson 12:

In Lesson 12, you'll learn about how to find, read and select the example queries. Then you will learn step-by-step how to use an example query to make a group call to the API. Jessica Barnett is your instructor for lesson 12.

Hi, I'm Jessica and I work in the Dissemination and Outreach branch.

Let's say that I want to find detailed data on the group quarters population, which includes both institutionalized and noninstitutionalized people, in Milwaukee, Wisconsin. When I look in data.census.gov, this information is provided in table P5.

I'd like to use the Census API to get this entire table—which is what we refer to as making a group call. So now the question is how to go about doing that.

First, let's navigate to the page with the API information that's directly related to the 2020 Redistricting data. And click on the link for geographies. If you click on that, you'll find all the geographies that the 2020 Census Redistricting data is available for.

We happen to need data for Milwaukee, which is considered a 'place' when we're talking Census geographies, and we can see on the 12th line that this data is available for places, which is Summary Level 160.

Now let's get into actually using the API. Navigate back over a couple columns and click on the same examples link that we selected earlier.

The first matches are for the 2000 Redistricting Data.

We need this data for Milwaukee, Wisconsin, so we're looking for the place geography. We discovered earlier that we're looking for Summary Level 160, so this helps make it a bit quicker to find what we're looking for.

Just scroll down until you find 160 listed in the second column titled Geography Level. There are three different API queries found for this. The first one includes an asterisk. When looking at API queries, an asterisk indicates that all geographies will be included. In other words, when we see that this particular query includes `&for=place` with the asterisk, we know that it will run the requested query and return data for all the places in the US.

The second query also includes asterisks for both the place and the state. While it looks a little different, as it is currently defined, this query will actually run the same data that the first query will run—in other words, it will run data for all places in all states. There are instances where using one of these queries over the other may be preferable, but we won't cover that right now.

Moving on to the third query, this one will run data for one specific place in the given state. Comparing these queries against our need for data for Milwaukee, it looks like we'll want to use this third query. Let's right click on this third query and select 'Open link in new tab.' Once it's done running, we can see that it provided the name of a place and state, New York city, New York, and it has the numbers '36' and '51000.' Although it seems like these numbers are related to New York city and New York state, this is a good time to confirm what these numbers mean.

Let's start with the two-digit number found near the end of the API query. This two-digit number is the state Federal Information Processing System, or FIPS, code. The state FIPS code included in this query, 36, is the code for New York. We're going to need the state FIPS code for Wisconsin though. In addition, we'll need to figure out what to do with the five-digit place number. It looks like this five-digit number corresponds to New York city, so how can we figure out what five-digit number corresponds to Milwaukee?

The easiest way to do this is to go back to the example queries, right click on the first 'place' query, and click on 'Open link in new tab.' This is going to run the query for all places in the US. At the end of each line of output, we can see there is a two-digit number and a five-digit number shown. The two-digit number is the state FIPS code and the five-digit number is the unique identifier for each place found in this list. For example, the first line shows that '26210' is the unique identifier for Ganado CDP, while the '04' indicates that it's in Arizona. We can determine this by looking at the numbers at the end of the line of output, as well as the Name that is provided.

So now let's move on to finding Milwaukee in all of this output. Hit the Ctrl and F keys to open the Find functionality and type in Milwaukee. The first match that comes up is

for Milwaukee CDP in North Carolina, which we don't want, so let's keep searching. The next match is for West Milwaukee village in Wisconsin—so we're in the right state, but this isn't quite the geography that we want. Finally, it looks like the third match is the one that we want—Milwaukee city, Wisconsin! Looking at the unique identifier number found at the end of that line, it looks like it's 53000. And we can see that the state FIPS code for Wisconsin is 55. Let's make a note of this to use later. Now that we have the identifier for Milwaukee and the FIPS code for Wisconsin, and to help eliminate any future mixup, I'm going to close this tab for the query we just used for all the places in the US—we won't need it any more for this example.

I'd like to note that you can also find a complete list of FIPS codes by going to our geographic reference files, which are linked below.

Let's return to our API query that is currently looking at New York city. Now that we know both the state FIPS code and the unique place identifier, we can go ahead and change those in the URL. Change '51000' to '53000,' change '36' to '55,' and hit Enter to run the query—we just want to make sure that things work as we expect in relation to changing the geography. And it worked! We now have the information for Milwaukee. So now we are partway through what we are trying to accomplish. All that's left is to change the query so that it runs data for all of table P5. Recall that this is referred to as running a group call. All this really means is that we're going to pull data for an entire table at once, instead of pulling data for individual variables.

To do this, go to the `get=` portion of the URL, and replace the word 'NAME' with the word 'group', open parenthesis, 'P5', and close parenthesis. Anytime that you pull data using a group call, you would use this same structure for the `get` statement. The only part that you would want to change is the ID of the table being used. In this case, we're using the table ID of P5. Now that we have that done, let's hit Enter again to see what happens. It worked! Reading from left to right, we have the geographic identifier, or GEOID, which is this long 16-digit number that is the full unique identifier for the place of Milwaukee city, Wisconsin; the Name of our geography of interest, Milwaukee city, Wisconsin; data for twenty variables; the state FIPS code of '55'; and the unique place identifier for Milwaukee, which is 53000.

Now let's take a closer look at the data for the variables. There are ten numbers that alternate with ten null values. The ten numbers correspond to the ten variables found in the table—P5_001N, which is the total number of people in group quarters; P5_002N, which is the total institutionalized population; P5_003N through P5_006N, which provide a detailed breakdown of the type of group quarters that the institutionalized population is in; P5_007N, which is the total noninstitutionalized population; and P5_008N through P5_010N, which provide a detailed breakdown of the type of group quarters that the noninstitutionalized population is in. So this means that there were 15,680 total people in group quarters, 3,422 people in the institutionalized population, and 12,258 people in the noninstitutionalized population in Milwaukee in 2020.

Then we have null values, such as P5_001NA to P5_010NA. These are described as being the annotation of each of the respective variables. For example, P5_001NA is the annotation of the total number of people in group quarters. If there was a change or a

note of explanation, it would be notated in these fields. But, as we can see, these values are all null, so there's nothing to worry about in this case.

Now that we have this data for Milwaukee, let's say that we need data from the same table, but for a different geography, like all the congressional districts in Nebraska. Since we've already prepared the query for Milwaukee, the only thing that we'll need to do at this point is swap out the geography portion of the API query—this is the part that says '&for=place:53000&in=state:55'.

Let's go back to the 2020 Redistricting Data API examples page—the one found at api.census.gov/data/2020/dec/pl/examples.html. We need to look for the queries for congressional districts. It happens to be about a third of the way down the page, and the Summary Level is 500. Again, we can see that we have three queries to choose from.

The first query is going to give you all the congressional districts in the US. The second query, as it is currently defined, will essentially provide the same data as the first—you'll end up with data for all the congressional districts in the US. As with the other case that we saw earlier, there are times where choosing one of these queries over the other is preferred, but we won't be covering that right now. The third and final query will provide you with data for one specific congressional district within the given state.

So we need data for all the congressional districts in Nebraska and none of these queries will provide exactly that information. The first two will provide a bit more than we need, as we'll have data on *all* the congressional districts in the US. The last one will not provide enough, as we would only be able to get data for one congressional district in Nebraska at a time. The good news is that there is a way to modify the second API query in order to get data for all the congressional districts within a state. We'll cover how to do this in a moment.

Recall that we still have the query open that we used to get data for Milwaukee and all we really need from this congressional district query is the geography portion. For now, let's just grab what we need. Right click on the second congressional district query, hit 'Open link in new tab, highlight the portion of the URL that begins with '&for=congressional%20district:*&in=state:*', right click on it, and hit Copy.

Now let's go back to the query that we were using earlier for Milwaukee. Highlight the very last part of the URL, the part that says '&for=place:53000&in=state:55', right click on it, and hit paste. This should swap out the old 'for' statement for Milwaukee with this new portion that's for all the congressional districts in the US. Once that's done, hit Enter to run the query.

It looks like it worked. The output starts off with providing the congressional districts in Missouri and moves on through the list of states. We only want Nebraska, though, so let's go back to what I mentioned earlier and modify the geography portion of the query so that it will only run for the congressional districts in Nebraska. We'll do this by changing the last asterisk in the query, the one for state, to the two-digit state FIPS code. So now we just need to figure out what the FIPS code is for Nebraska. Let's make use of what we have on the screen right now. Hit the Ctrl + F keys to open the search functionality. Type in Nebraska. We just need the FIPS code, which is the second-to-last number in the output. From this first match, it looks like the FIPS code is

31. Now let's navigate back up to the query and change that last asterisk for state to '31.' Then hit Enter to run the query. And it worked! Now we just have data for the three congressional districts in Nebraska, which is exactly what we needed.

The output reads very much like it did before for Milwaukee. It starts out by giving the GEOID, which is the full unique identifier for each congressional district; the name of each congressional district; data for the ten variables, along with data for the ten annotation variables; the state FIPS code of '31'; and the congressional district number.

As you can see, once you get the hang of it, the Census API can provide a very quick and easy way to get the data you need.

I hope this tutorial helps you in finding the 2020 P.L. 94-171 Redistricting Data through the Census API.

We hope that you found this course informative. To be the first to hear about new Census Academy learning content be sure to sign up for email updates, follow us on social media and go to [Census.gov/academy](https://www.census.gov/academy).